

jean-françois **pambrun**

researcher | engineer | software developer

about

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canada

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github://jpambrun

languages

french/english

programming

java, javascript
matlab, python
linux, git, c, c++
latex, tensorflow

standards

dicom, ihe, hl7
jpeg 2000, jpip

interests

medical imaging
image compression
deep learning
rendering

† not a member of the OIQ
‡ fast-track doctoral
admission without obtaining
a master's degree

education

- 2011-2016 **Ph.D. in electrical engineering** École de technologie supérieure (ÉTS)
improving medical image compression and transmission
• develop a novel image quality metric adapted to diagnostic imaging
• propose a novel jpeg 2000 bit allocation mechanism
• improve streaming for large image series (ct, mr, tomo, etc.)
• skills: research, compression, streaming, matlab, java, c++, itk/vtk
- 2009-2010 **M.Sc. in electrical engineering (incomplete†)** École de technologie supérieure (ÉTS)
evaluation of the diagnostic quality of lossy compressed medical images
• research medical image quality assessment and diagnostic losslessness
• quantify the ct acquisition parameters that affect compressibility
• skills: research, compression, matlab, java, c++, itk/vtk, cuda
- 2005-2009 **B.ing. in electrical engineering** École de technologie supérieure (ÉTS)
information technologies and telecommunication

experience

- 2016 (dec-) **software developer** nucleus.io
cloud-based diagnostic workstation with client-side MPR
• design and implement a client-side multi-planar reconstruction renderer
• design and implement a 3d compression algorithm for fast streaming
• design and implement annotation tools such as length, Cobb angle, etc
• write highly optimized code using the latest web technologie
• ensure support for ct, mr, pet, ultrasound, large tomosynthesis, etc
• skills: javascript, nosql, mongodb, python, nodejs, webgl, rendering
- 2016 (jun-dec) **postdoctoral fellow** CHUM research centre
improve image-guided prostate cancer brachytherapy treatments
• implement MR-Ultrasound fusion and segmentation using machine learning
• study the impact of dual energy ct dect) on current fusion algorithms
• evaluate an experimental non-rigid mr-us fusion workflow in the operating room
• skills: python, tensorflow, machine learning, registration, segmentation
- 2016 (sep-dec) **lecturer** École polytechnique de montréal
procedural programming (inf1005a)
• teach introductory procedural programming using matlab
• skills: communication, leadership

experience (cont.)

2009-2016	lecturer software development environment (ele116) <ul style="list-style-type: none">· teach object oriented programming with java· discuss development tools such as ide, debuggers and git image processing and analysis (ele747) <ul style="list-style-type: none">· teach image processing techniques using matlab· discuss topics such as fft, edge detectors and compression	École de technologie supérieure (ÉTS)
2007-2014	teaching assistants healthcare distributed systems (gts840) <ul style="list-style-type: none">· supervise and grade graduate student lab assignments· discuss topics such as hl7, ihe and dicom software development environment (ele116) image processing and analysis (ele747)	École de technologie supérieure (ÉTS)
2009 (jan-sep)	software developer head-up display simulation for military flight simulators <ul style="list-style-type: none">· implement a c/c++ modules to stimulate and simulate avionics systems· implement an opengl solution to simulate a hud· work with clients to fix issues and achieve acceptance· skills: c, c++, pascal, opengl, simulation	CAE inc.
2006-2008	research assistant implementation of a standard compliance validation tool for hl7v3 <ul style="list-style-type: none">· implement a hl7v3 for validation prior to connectathon· provide support for implementors· skills: java, xml, xml schemas, xslt, soap implementation and evaluation of a medical image streaming framework <ul style="list-style-type: none">· evaluate jpip for large image stacks and large image streaming· skills: java, jpip, jpeg 2000	École de technologie supérieure (ÉTS)

awards

2017	NSERC postdoctoral fellowship (declined)	90,000\$
2017	FRQNT postdoctoral fellowship (declined)	70,000\$
2016	GRSTB postdoctoral fellowship	18,000\$
2011	NSERC doctoral Alexander-Graham-Bell scholarship	105,000\$
2011	ÉTS excellence graduate student scholarship	60,000\$
2011	FRQNT doctoral research scholarship (declined)	60,000\$
2009	FRQNT master's research scholarship	30,000\$
2006	NSERC undergraduate student research award	4,500\$

committee and board memberships

2013-2016	board member of an NPO vice-president of services academic commission student representative disciplinary committee student representative	Association étudiante de l'ÉTS
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publications

articles in peer-reviewed journals

The utilization of MRI in the operating room

Ménard C , Pambrun J-F, Kadoury S

Brachytherapy. *Elsevier*, 2017

Computed Tomography Image Compressibility and Limitations of Compression Ratio-Based Guidelines

Pambrun J.F. , Noumeir R.

Journal of Digital Imaging. *Springer Science*, 2015

Teaching DICOM by Problem Solving.

Noumeir R. , Pambrun J.F.

Journal of Digital Imaging. *Springer Science*, 2012

Streaming of medical images using JPEG2000 interactive protocol

Pambrun J.F. , Noumeir R.

International Journal of Innovative Computing and Applications. 2012

Using JPEG 2000 Interactive Protocol to Stream a Large Image or a Large Image Set

Noumeir R. , Pambrun J.F.

Journal of Digital Imaging. *Springer Science*, 2010

international peer-reviewed conferences/proceedings

Limitations of the SSIM quality metric in the context of diagnostic imaging

Pambrun J.F. , Noumeir R.

IEEE International Conference on Image Processing (ICIP), 2015

Compressibility variations of JPEG2000 compressed computed tomography

Pambrun J.F. , Noumeir R.

IEEE International Conference of the Engineering in Medicine and Biology Society (EMBC), 2013

Learning DICOM by solving real clinical problems

Noumeir R. , Pambrun J.F.

IEEE-EMBS International Conference on Biomedical and Health Informatics, 2012

Perceptual quantitative quality assessment of JPEG2000 compressed ct images with various slice thicknesses

Pambrun J.F. , Noumeir R.

IEEE International Conference on Multimedia and Expo, 2011

Interoperability testing of integration profiles based on HL7 standard version 3

Pambrun J.F. , Noumeir R.

IEEE International Conference on Information Technology and Applications in Biomedicine, 2010

Hands-on Approach for Teaching HL7 version 3

Noumeir R. , Pambrun J.F.

IEEE International Conference on Information Technology and Applications in Biomedicine, 2010

Streaming of Medical Images Using JPEG 2000 Interactive Protocol

Noumeir R. , Pambrun J.F.

IEEE International Conference on Systems, Signals and Image Processing. 2010

Interoperability Testing Software for Sharing Medical Documents and Images

Berube R. , Pambrun J.F, Noumeir R.

IEEE International Conference on Internet and Web Applications and Services. 2010

Images within the Electronic Health Record

Noumeir R. , Pambrun J.F.

IEEE International Conference on Image Processing. 2009